

CERN

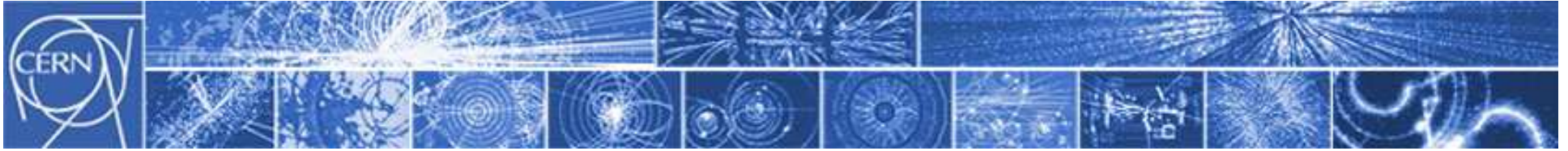
European Organization for Nuclear Research  
Organisation Européenne pour la Recherche Nucléaire

# Angels, Demons and Black Holes: Threat or Opportunity?

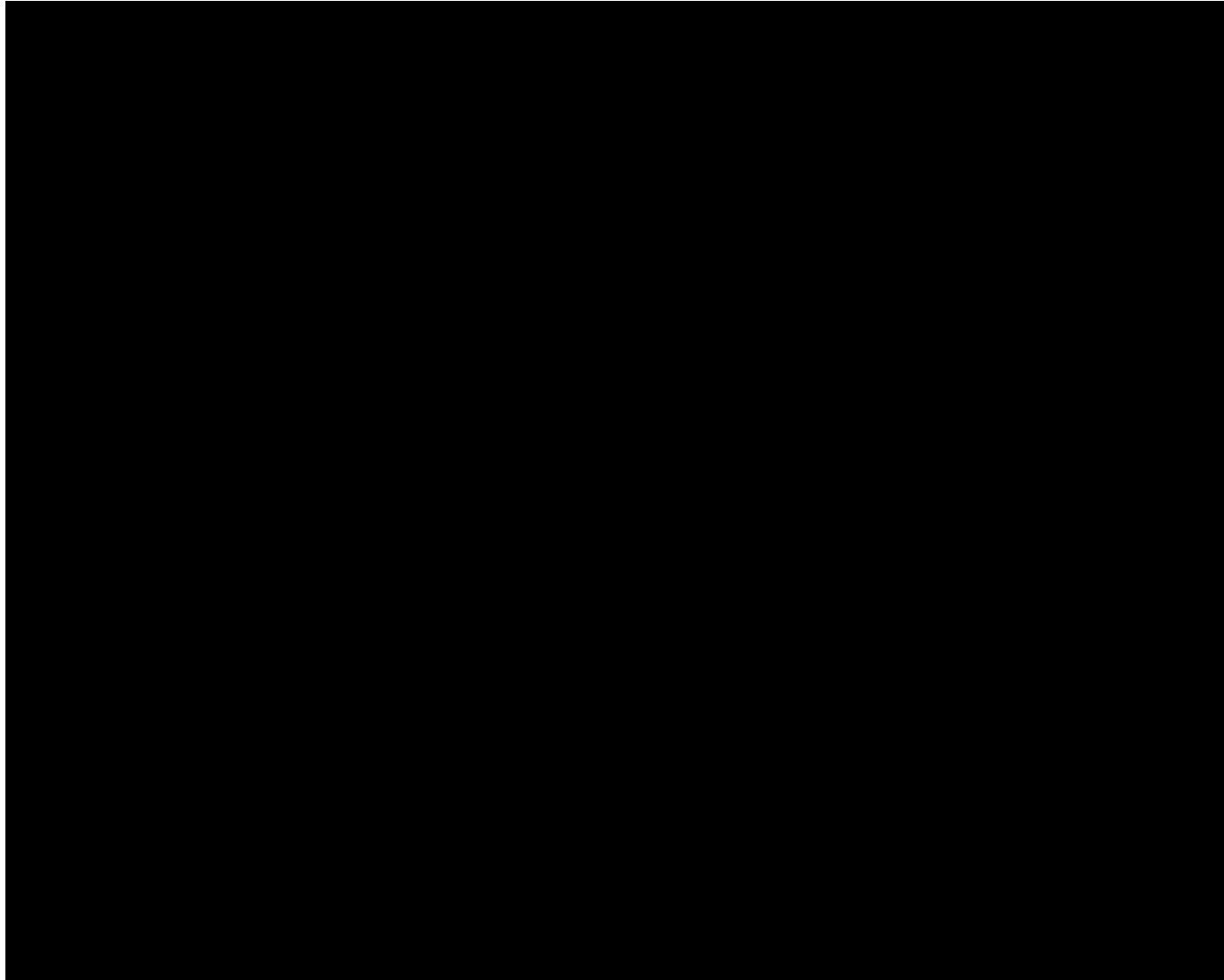
Experience from CERN through the start-up of the LHC

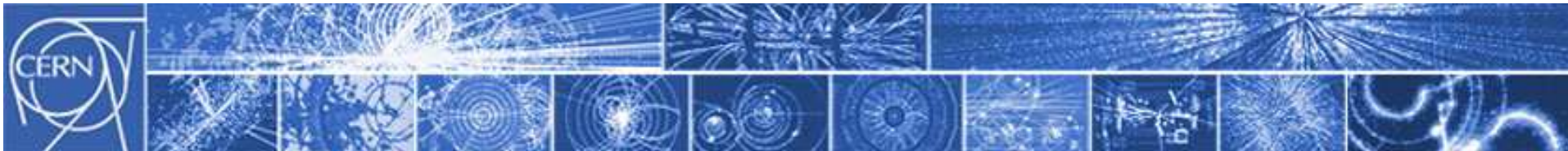
James Gillies, CERN

Brookhaven, 9 June 2010

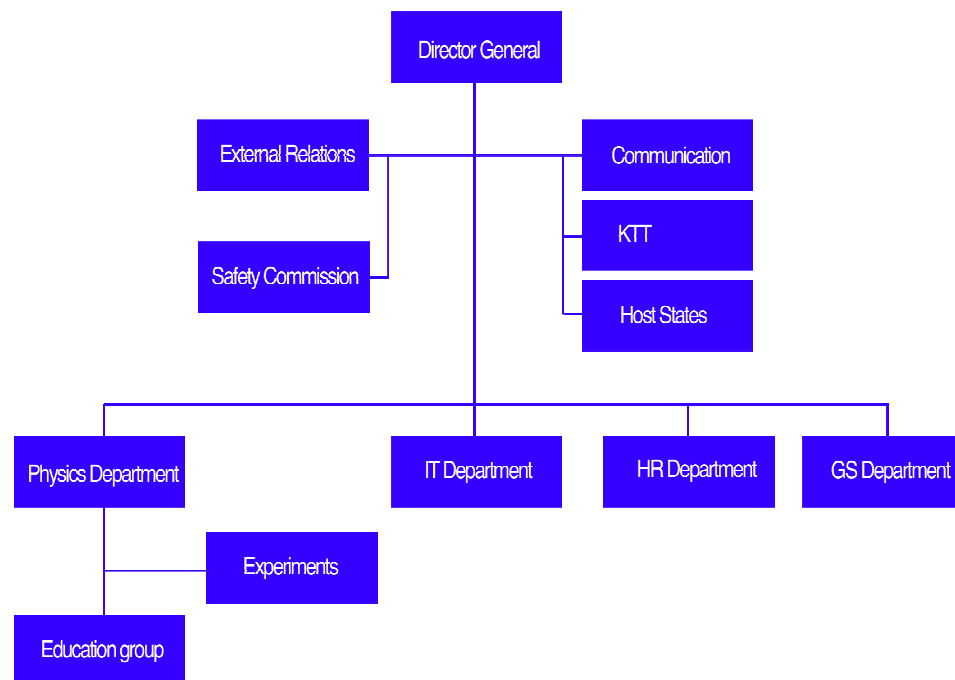


What does (or did?) the world know about particle physics?





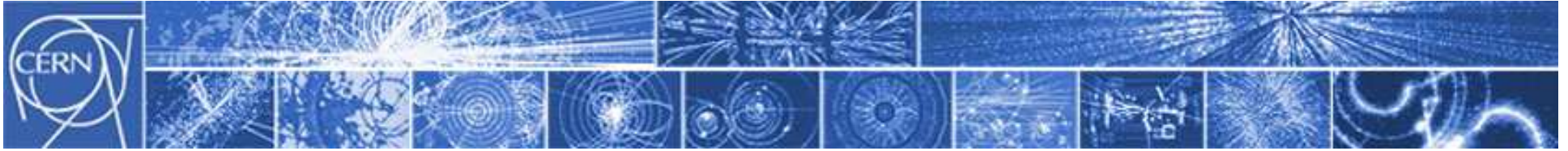
## Organigramme of Communication at CERN



Coordination: CERN Internal Communication Network, chaired by DG-CO, reports to DG

### Membership:

Experiments' outreach coordinators  
LHC communication officer  
KTT communication officer  
IT communication officer  
HR communication officer  
PH-EDU representative  
GS representative  
SC representative  
*ex officio*: External Relations Coordinator



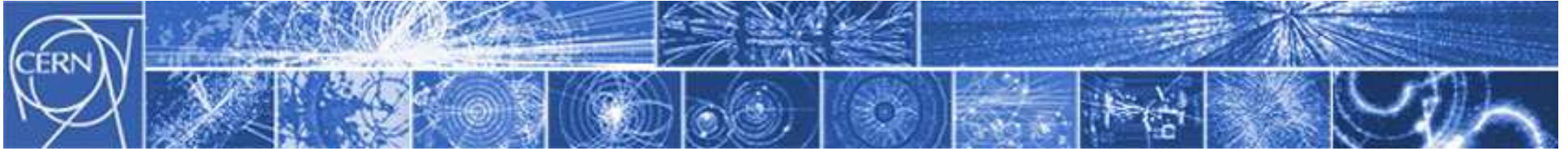
# Education and outreach: a few figures



- Visit programme: 40000
- Open days: 70000
- Teacher programmes: 1000
- Local outreach
- Exhibitions

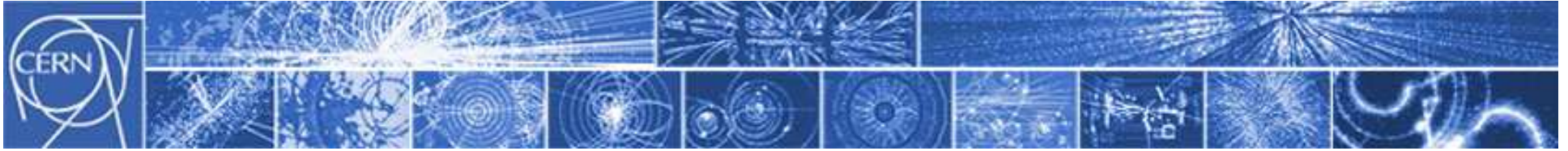




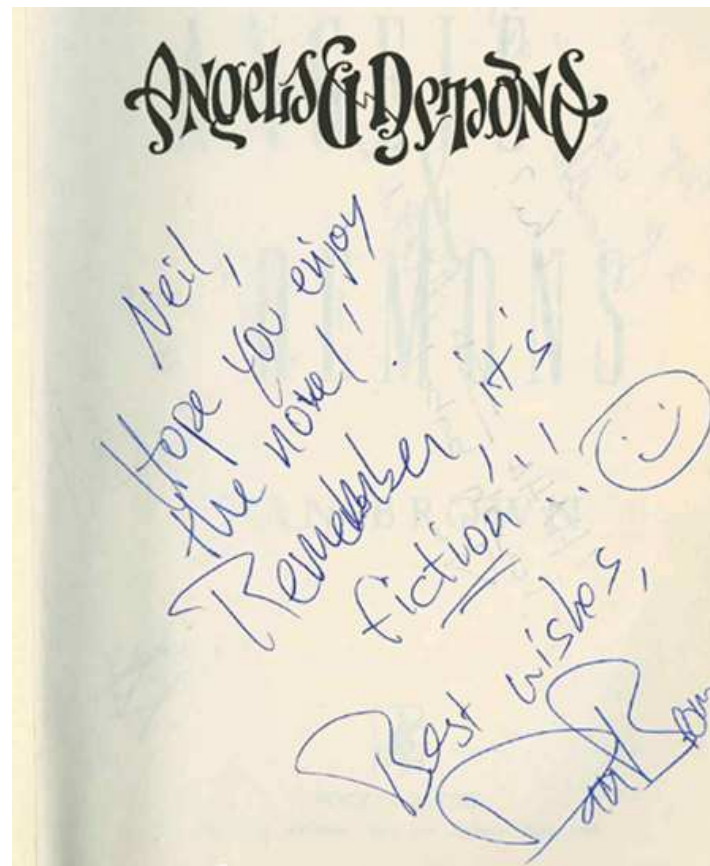


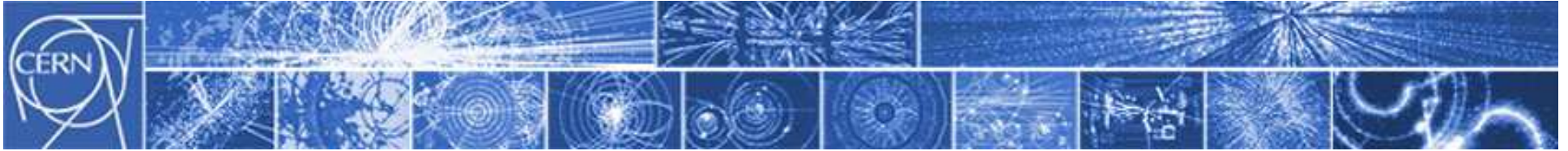
# Communicating the LHC?

We made the most of whatever came our way



... this arrived on my desk in 2000

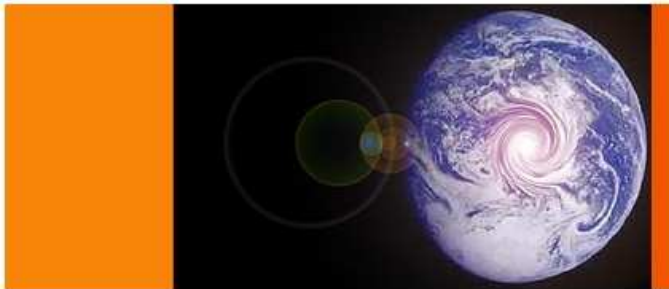




# ... and then came End Day...

FRIDAY FRIDAY

BBC  
THREE



## End Day

- Home
- End Day: Mega-Tsunami
- End Day: Comet Attack
- End Day: Killer Virus
- End Day: Supervolcano

The BBC is not responsible for the content of external internet sites

Documentaries & Arts

## End Day: End of the Universe

Deep within the bowels of a particle accelerator on the East Coast of the US, an extraordinary experiment is being prepared. Scientists are pursuing their quest to understand the nature of matter itself. On the streets, the public holds a protest to stop their work...

### Fact!

Scientists are experimenting with the very nature of reality itself; building ever larger and more powerful particle accelerators in what could turn out to be a game of total annihilation.

In a 600 million dollar laboratory, within a vast ring of magnets miles across, atoms can be made to travel at the speed of light then crashed to create particles that haven't existed since the Big Bang ... and possibly some that have never existed at all.

Scientists accept that black holes can be created but these are small enough to evaporate before they can suck in all surrounding matter. They have also calculated the precise risk of another terrifying possibility: a phase change of space-time leading to the complete breakdown of the universe as we know it.

But most frightening of all is the creation of a group of strange quarks called 'dangerous strangelets'. These are so dense they could burrow to the centre of the Earth, transforming everything they touch into anti-matter, condensing our planet into a tiny lifeless sphere.

They are experimenting right now...

Do you feel safe?

## Fiction?

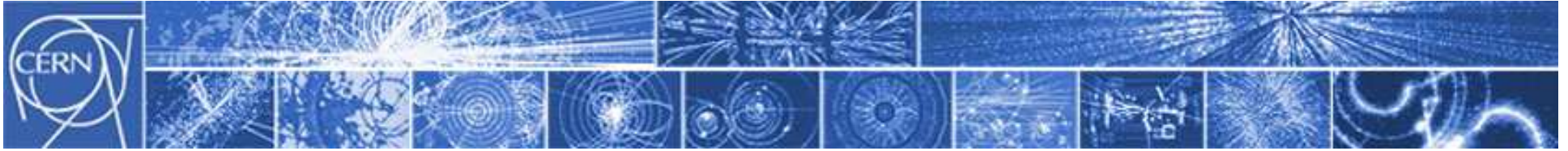
It's **End Day** and within a deep underground chamber physicists have briefly created exotic particles and space-time warps by violently smashing atoms.

But something unforeseen happens. 'Strangelets' appear. Suddenly, the normal laws of physics cease to apply. Reality warps and alters. Atoms are transformed into totally new forms of matter.

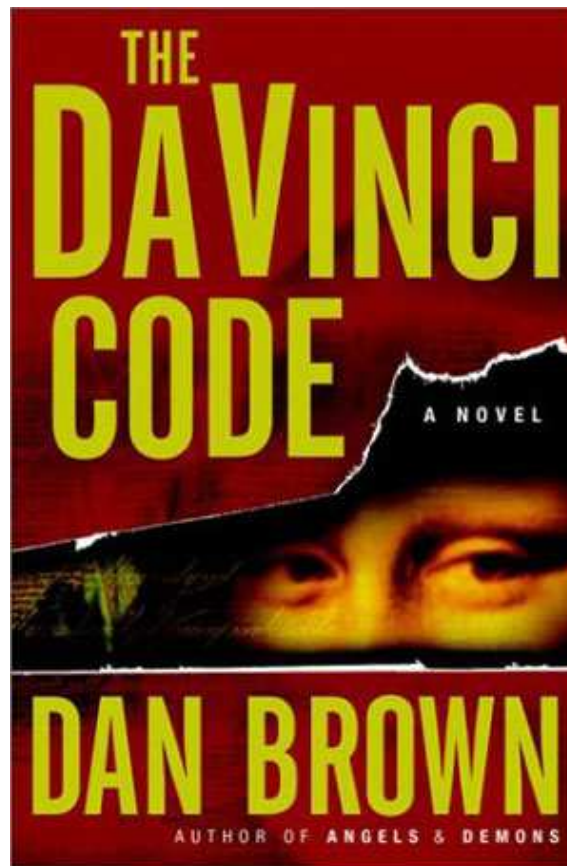
The singularity burrows into the Earth, twisting the atomic structure of the surrounding rocks as it falls into the planet's centre.

A wave of total destruction expands outwards, consuming everything in its path. Life ends. The Earth vanishes...

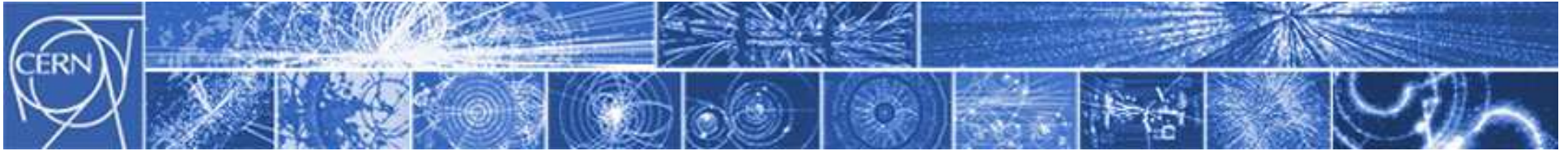
The universe as we know it ceases to exist.



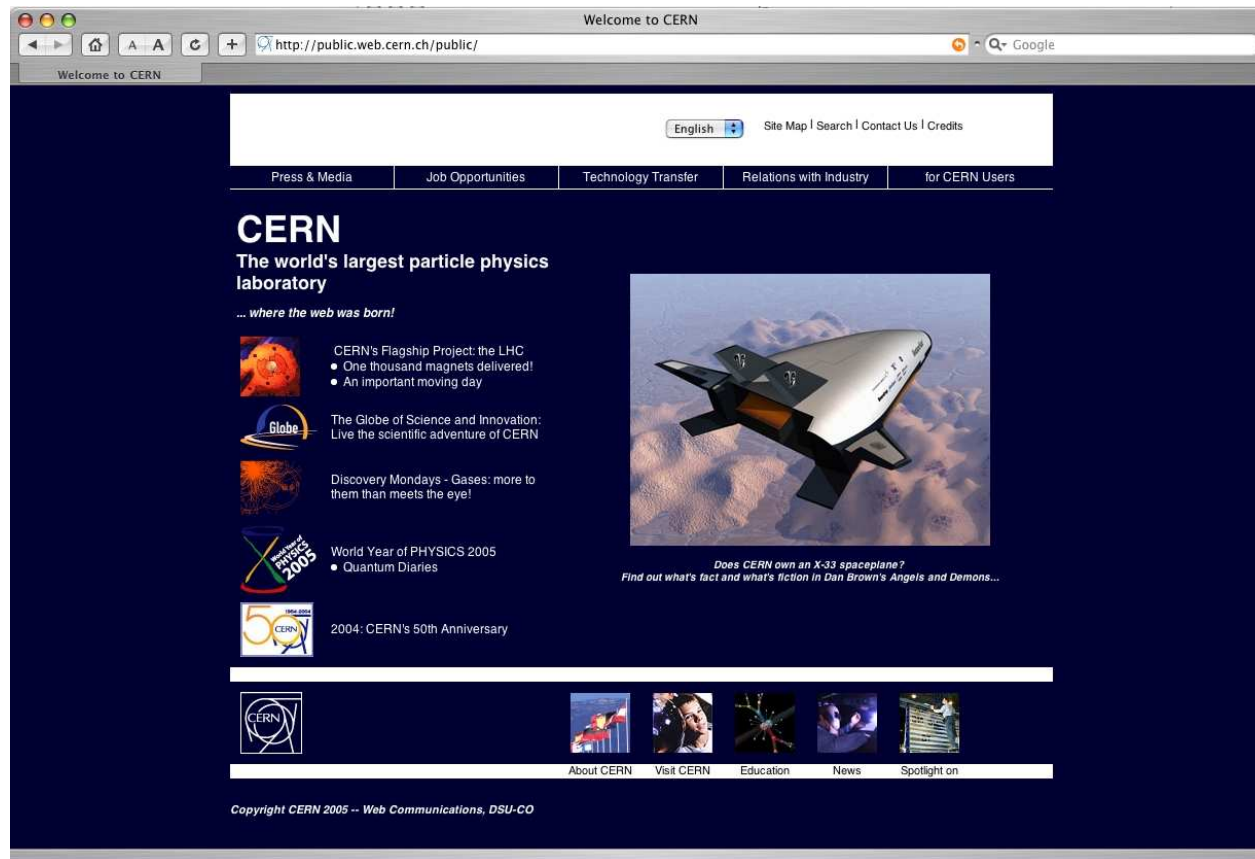
... and then came The Da Vinci Code

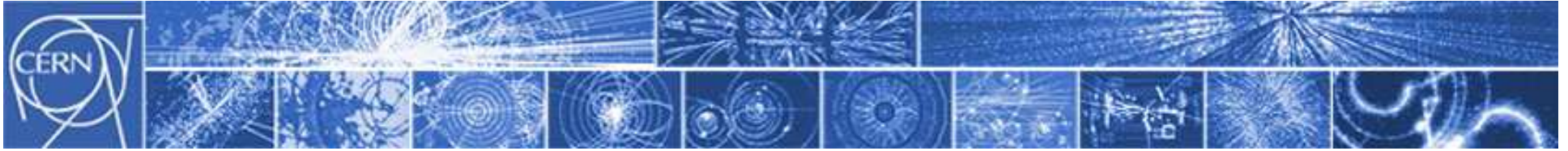






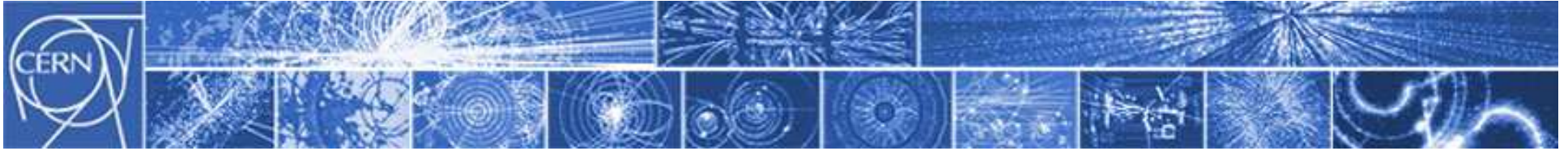
# It was time for CERN to act!





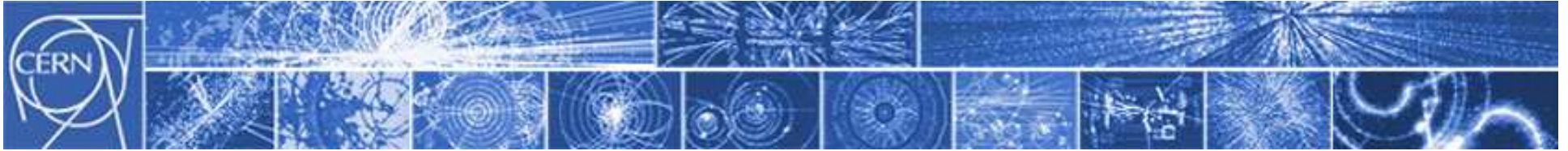
## True or false?

- |   |   |
|---|---|
| CERN has a space plane.                   | ✗ |
| CERN makes antimatter.                    | ✓ |
| Georges Charpak plays frisbee.            | ✗ |
| Antimatter could solve the energy crisis. | ✗ |
| Antimatter is used in PET scanners.       | ✓ |
| PET scanners are developed at CERN.       | ✓ |



2007: a visit from Ron Howard...





# ...led to a contract with Sony...

WORKING DRAFT 24-01-08 - without prejudice

AGREEMENT

BETWEEN

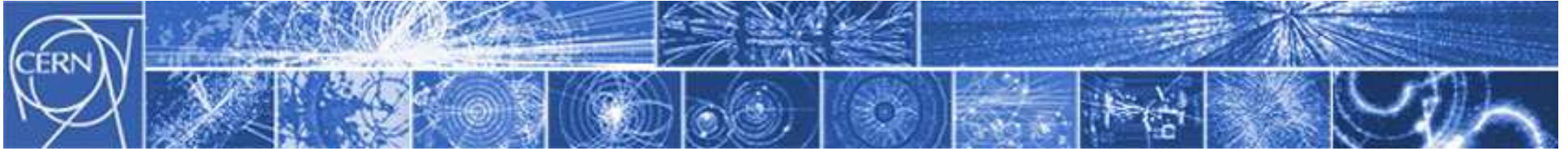
OBELISK PRODUCTIONS LIMITED  
(OBELISK)

AND

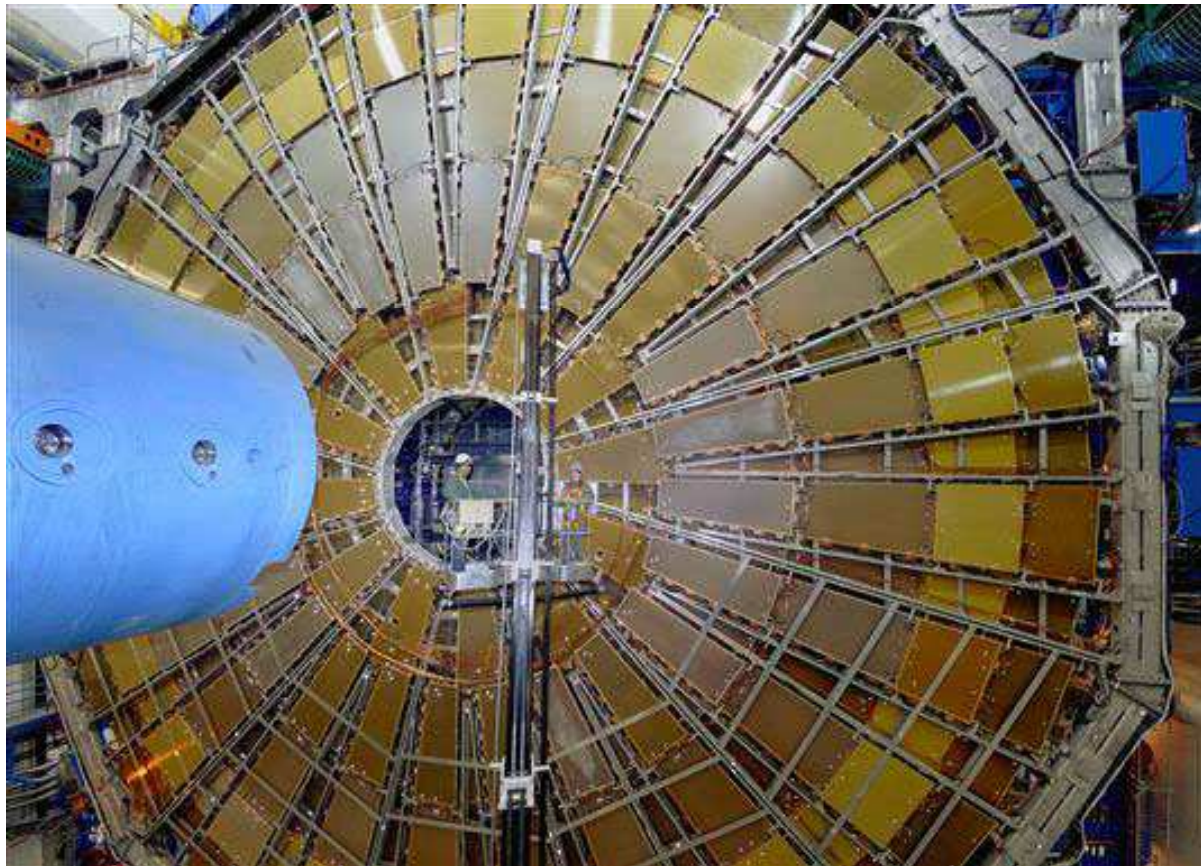
THE EUROPEAN ORGANIZATION  
FOR NUCLEAR RESEARCH  
(CERN)

2008

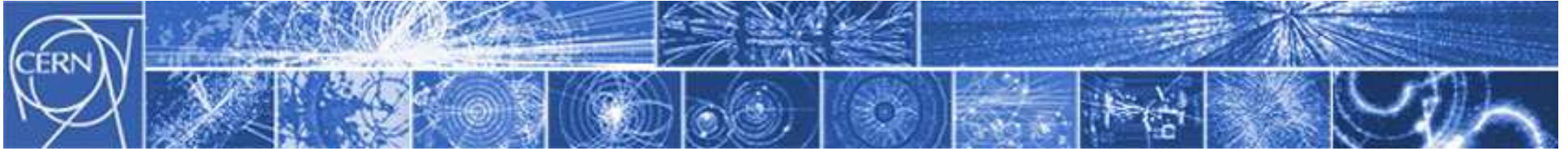




...some filming...

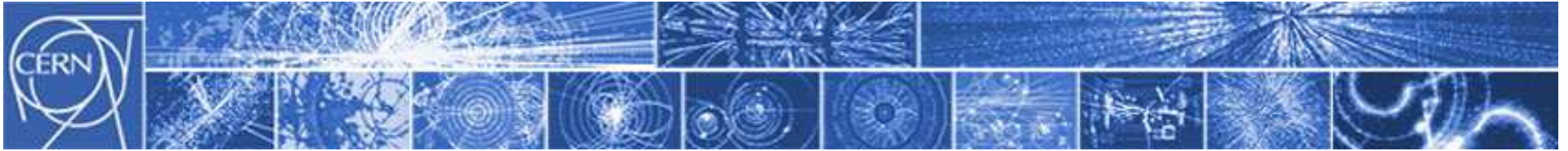






...and a big media junket at CERN





# We did tie-ins with the launch, and we're on the BluRay disk

**ANGELS & DEMONS.**  
*Lecture Nights*  
THE SCIENCE REVEALED

[HOME](#)  
[ABOUT THE SERIES](#)  
[SCHEDULED LECTURES](#)  
[RESOURCES AND LINKS](#)  
[RESOURCES FOR LECTURERS](#)  
[OFFICIAL ANGELS & DEMONS WEB SITE](#)

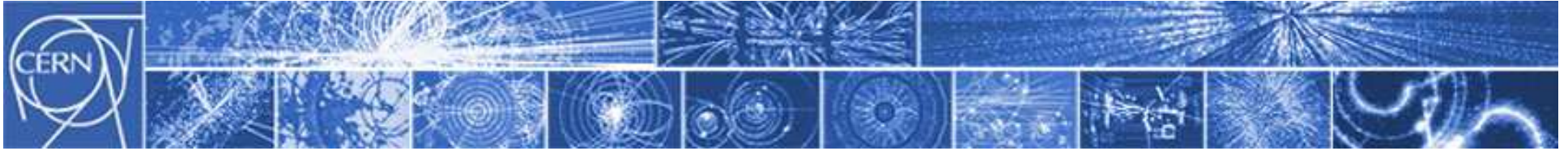
This May will see the world premiere of *Angels & Demons*, an action-packed thriller based on Dan Brown's best-selling novel that focuses on an apparent plot to destroy the Vatican using a small amount of antimatter. In the book and the movie, that antimatter is made using the Large Hadron Collider and is stolen from the European particle physics laboratory CERN. Parts of the movie were actually filmed at CERN. It's not every day that a major motion picture places particle physics in the spotlight, especially one starring Tom Hanks and directed by Ron Howard. Through a series of public lectures, the particle physics community is using this opportunity to tell the world about the real science of antimatter, the Large Hadron Collider and the excitement of particle physics research.

Visit the links above to locate a lecture in your area, learn more about the science behind *Angels & Demons*, or volunteer to give a lecture.

For more information, contact [Elizabeth Clements](#) or [Katie Yurkewicz](#).

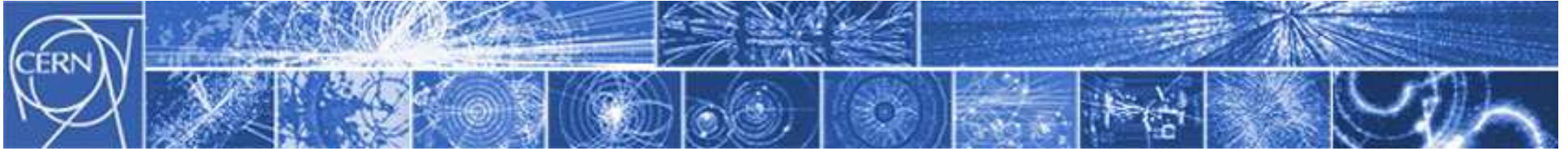
    

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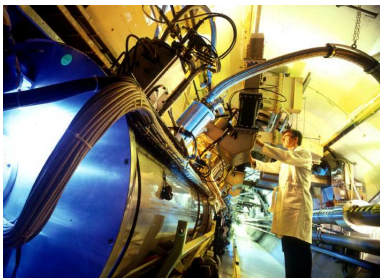
Even Earth-eating black holes?





# They've always been there..

Year	Machine	Web	Hype
------	---------	-----	------



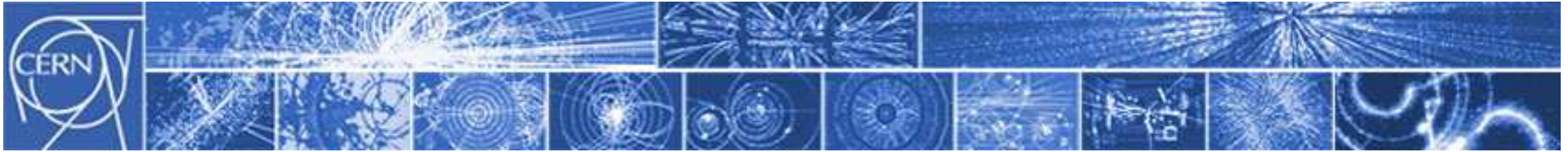
1989	LEP	None	None
------	-----	------	------



1999	RHIC	Web 1.0	Little
------	------	---------	--------



2008	LHC	Web 2.0	Lots
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# CERN played it low key...



European Organization for Nuclear Research

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- Why the LHC
- How the LHC works
- The LHC Experiments
  - ALICE
  - ATLAS
  - CMS
  - LHCb
  - TOTEM
  - LHCf
- Computing
- The safety of the LHC**
- Facts and figures
- LHC Milestones

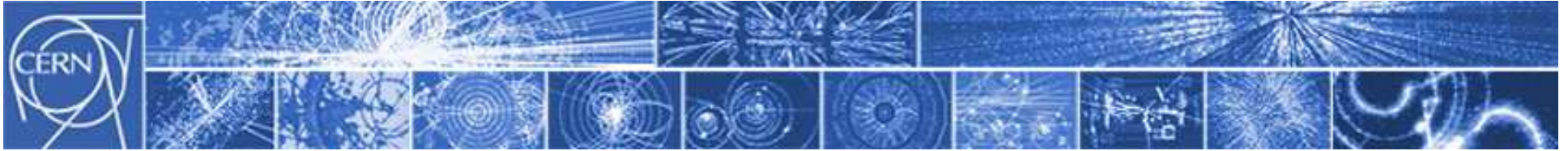
## The safety of the LHC

The Large Hadron Collider (LHC) can achieve an energy that no other particle accelerators have reached before, but Nature routinely produces higher energies in cosmic-ray collisions. Concerns about the safety of whatever may be created in such high-energy particle collisions have been addressed for many years. In the light of new experimental data and theoretical understanding, the LHC Safety Assessment Group (LSAG) has updated a review of the analysis made in 2003 by the LHC Safety Study Group, a group of independent scientists.

LSAG reaffirms and extends the conclusions of the 2003 report that LHC collisions present no danger and that there are no reasons for concern. Whatever the LHC will do, Nature has already done many times over during the lifetime of the Earth and other astronomical bodies. The LSAG report has been reviewed and endorsed by CERN's Scientific Policy Committee, a group of external scientists that advises CERN's governing body, its Council.

*The following summarizes the main arguments given in the [LSAG report](#). Anyone interested in more details is encouraged to consult it directly, and the technical scientific papers to which it refers.*





...at least at first.


## Daily Show Does CERN

 Stumble! Like? 

If you watch the Daily Show, you know the ~~inane~~ humor of John Oliver, one of the regular "correspondents" on the show. My colleagues at CERN tell me that he's visiting CERN now, filming one of his inimitable segments on the LHC and the experiments, to be aired "some time after April 21". Personally, I can't wait to see it - he is always funny and usually pretty sharply barbed. He apparently rode an LHC dipole

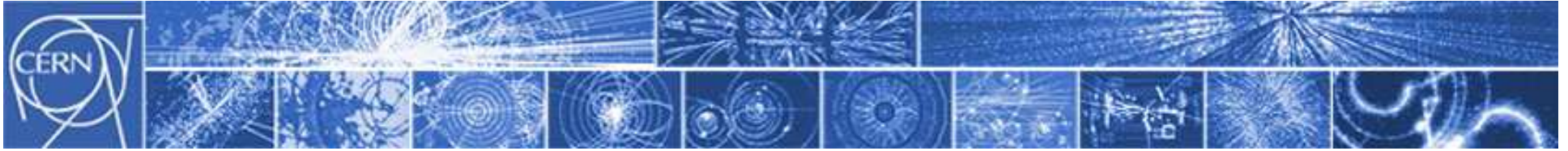


magnet like Slim Pickens rode the bomb in Dr. Strangelove, and asked one of our guys "is there anything you do here that's *not* boring?" His video spots are always edited tightly to get the maximum laugh quotient. Anyway, here he is in the CMS cavern, earlier today (thanks to my student Matt Searle for the photo!)

 ShareThis

April 8th, 2009 by John in [Miscellany](#), [Science and the Media](#) | [14 comments](#) | [RSS feed](#) | [Trackback >](#)

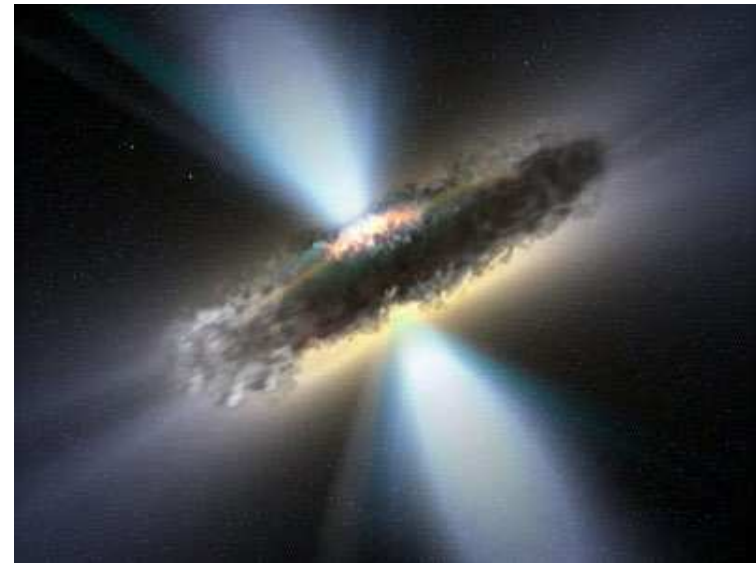
50/50



# Would we do the same again?



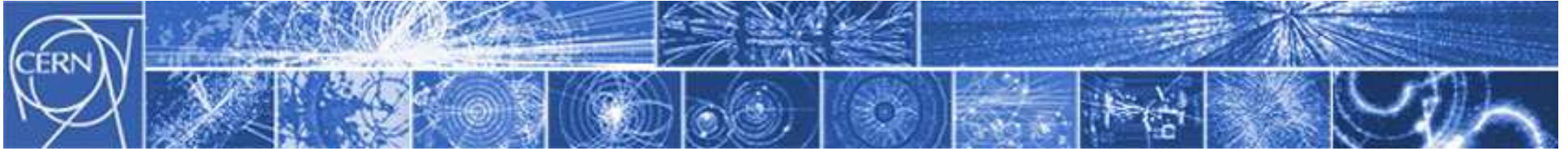
CERN in fiction...



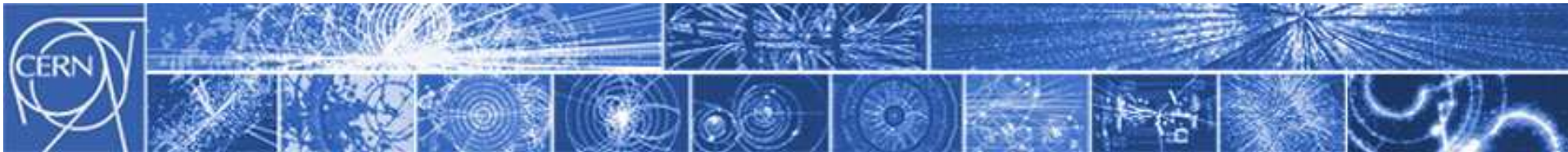
CERN in fiction dressed up as fact...

Both helped us get sell our story.  
With hindsight, we'd have treated them in the same way.

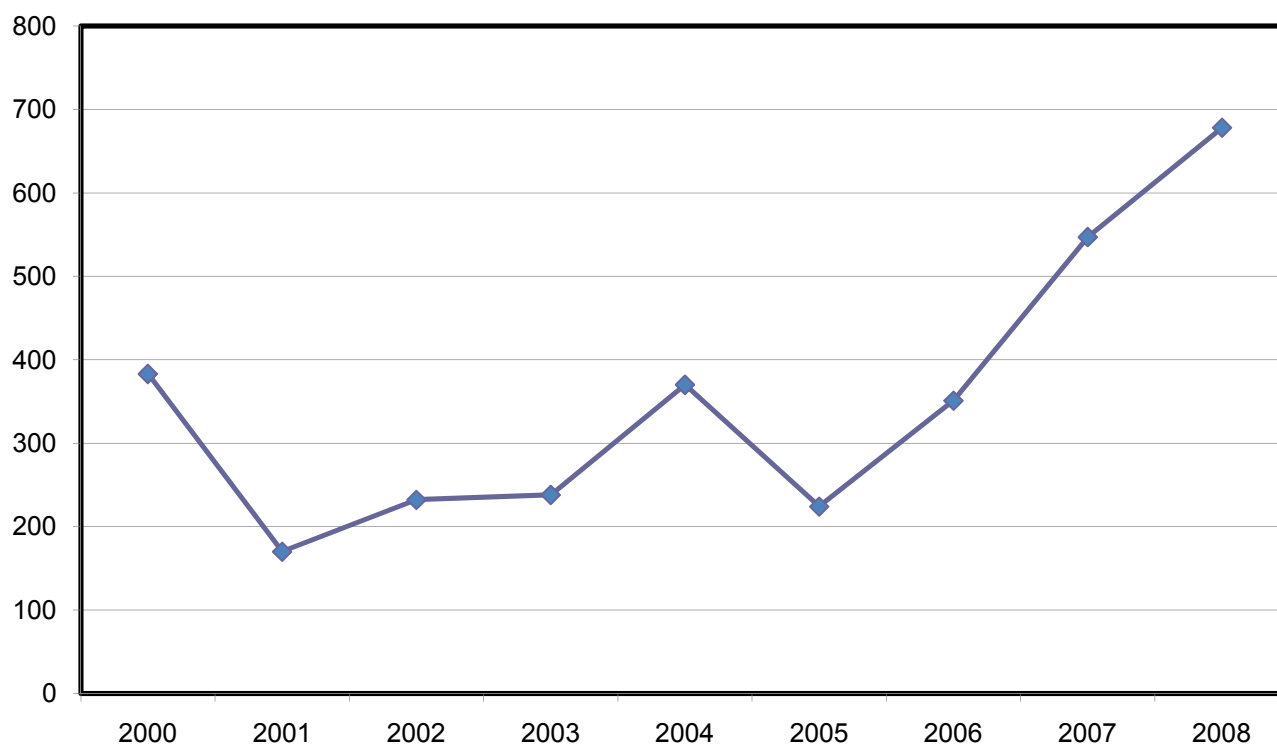


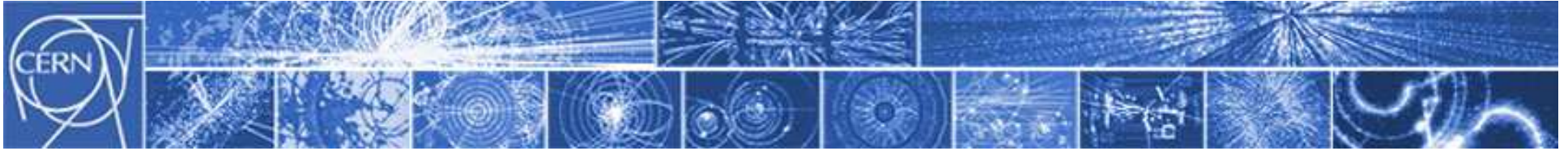


Meanwhile, back at the lab...



## Media Visits on Site





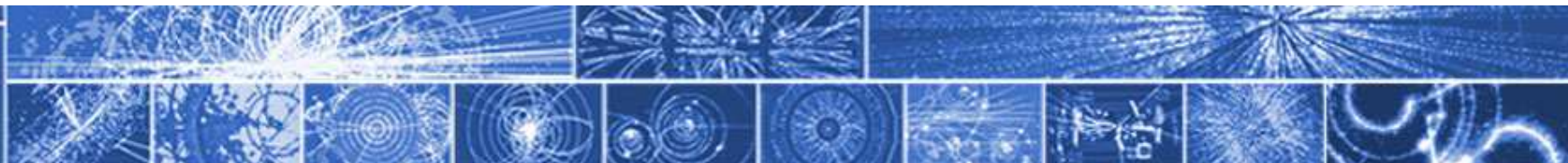
# CERN LHC Communication Plan

## DRAFT 1, 15 January 2005:

The aim of this plan is to gain maximum benefit in terms of public image for CERN and particle physics world-wide through the unique communications opportunity presented by the start-up of the LHC in 2007, and first results coming in some months later. It is a three-year plan starting in 2006.

The start up of the LHC provides a unique opportunity to promote these messages, and in addition to position the LHC as a European success story and a global endeavour. It also gives us the opportunity to position fundamental science as a long-range force for innovation through each of CERN's four missions - research and discovery; training; technology; collaboration.

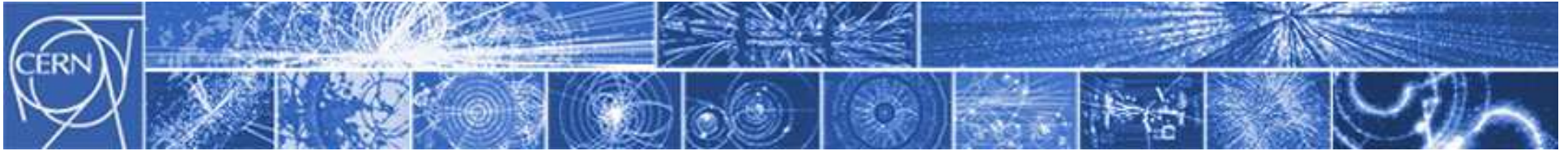




# Singing in harmony







Strength in numbers...



**ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

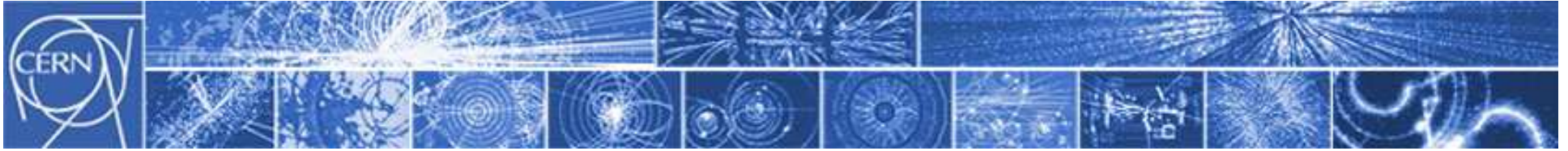


**Ciemat**  
Centro de Investigaciones  
Energéticas, Medioambientales  
y Tecnológicas



**BROOKHAVEN**  
NATIONAL LABORATORY

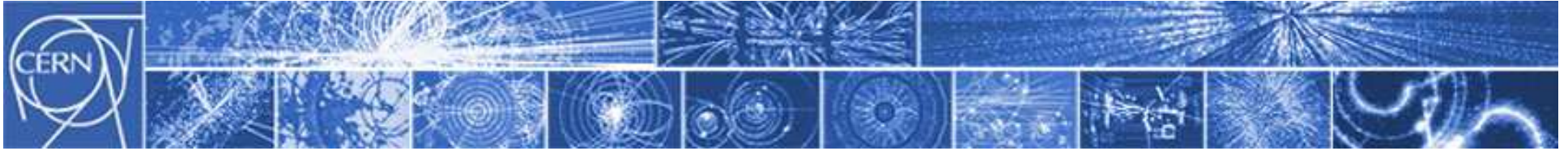




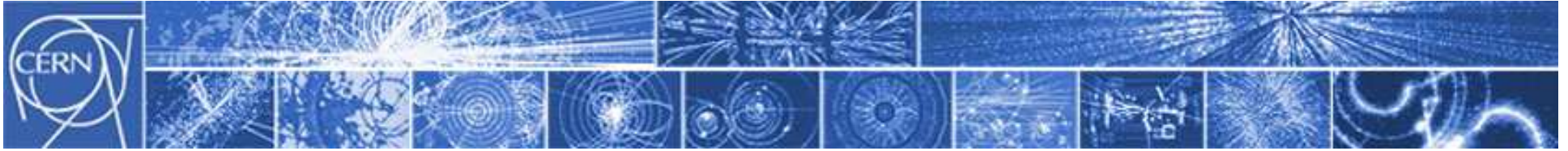
# CERN strategic communication plan 2009-2013

## DRAFT 1, 22 April 2009

This plan covers the period 2009-2013, during which the first results from the LHC will be published. Its main objective is to build on the platform created by the public impact of the LHC start-up in 2008 to position CERN's key message of basic science as a key knowledge and innovation driver.



Our approach: transparency



# Perception versus reality

What is CERN?

European Organization for Nuclear Research?

European Laboratory for Particle Physics?

## Perception

CERN is a nuclear lab

CERN does military research

CERN is secretive

CERN is closed

## Reality

Particle physics

Forbidden

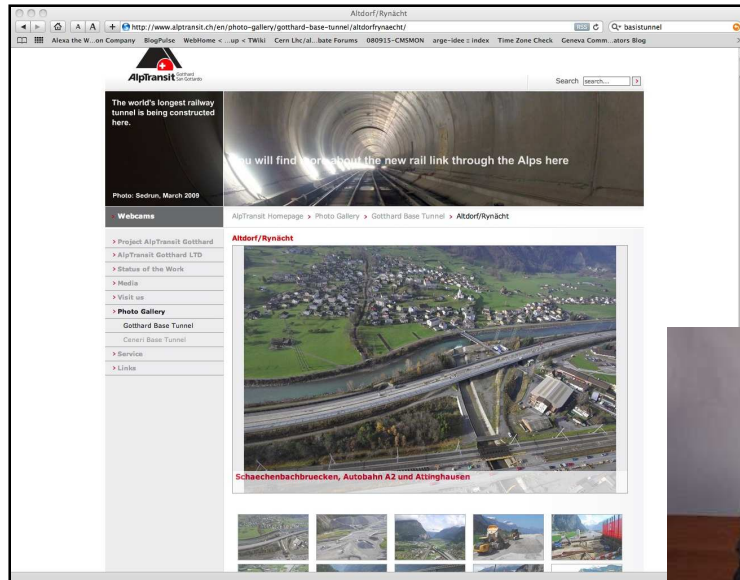
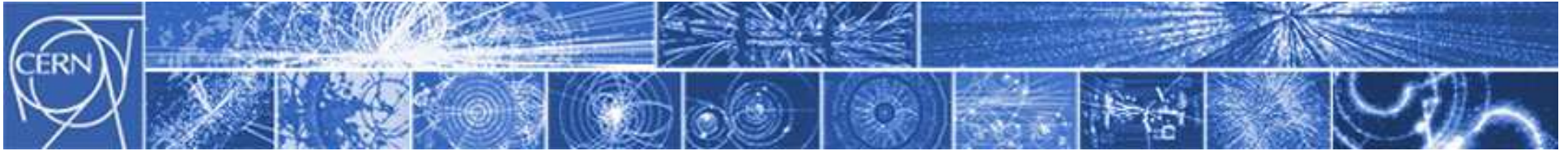
Publishes openly

Open to the public

Much of our intranet is accessible.

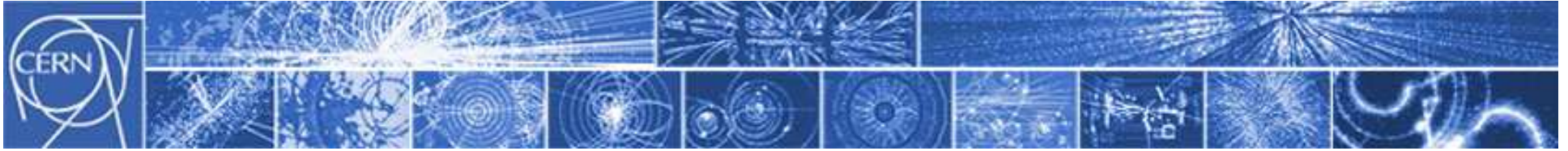
Many of our scientists are encouraged and enabled to communicate.





## Open communication works

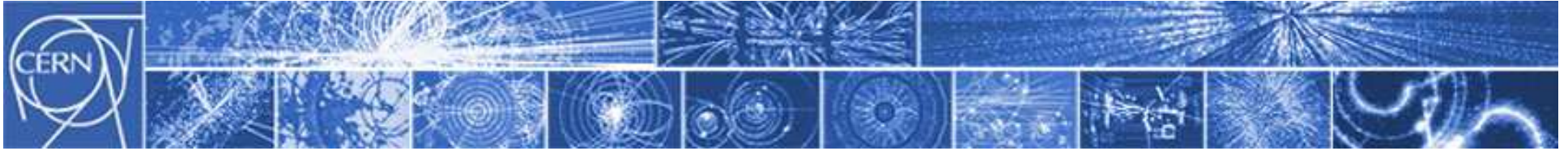




## And costs nothing..

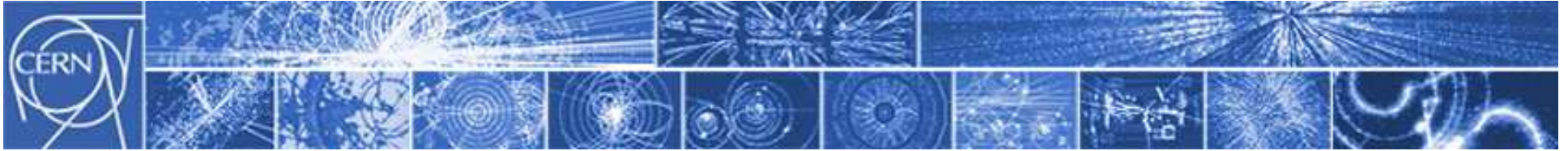


- Gain trust
- You have no choice
- If it falls down, the world will know anyway.

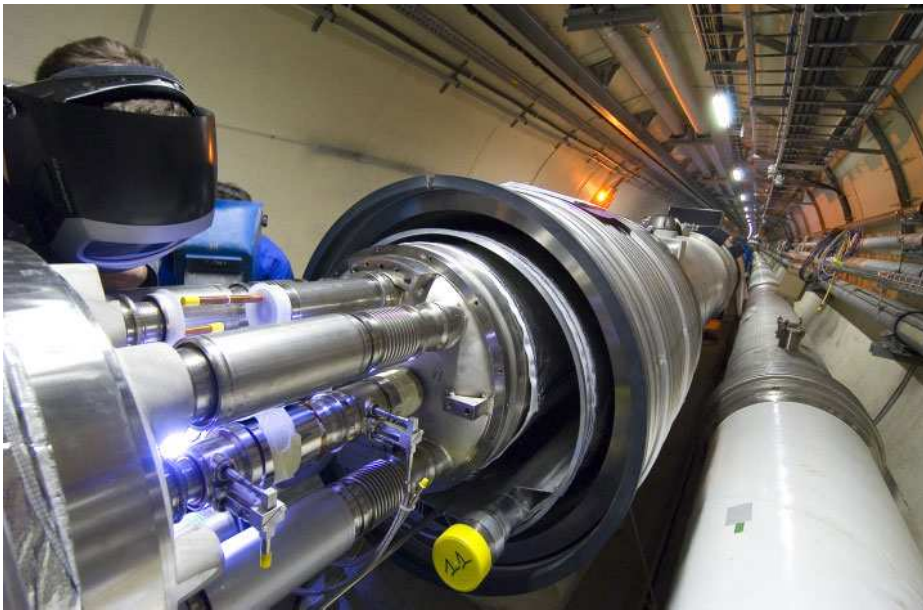


The world is watching.

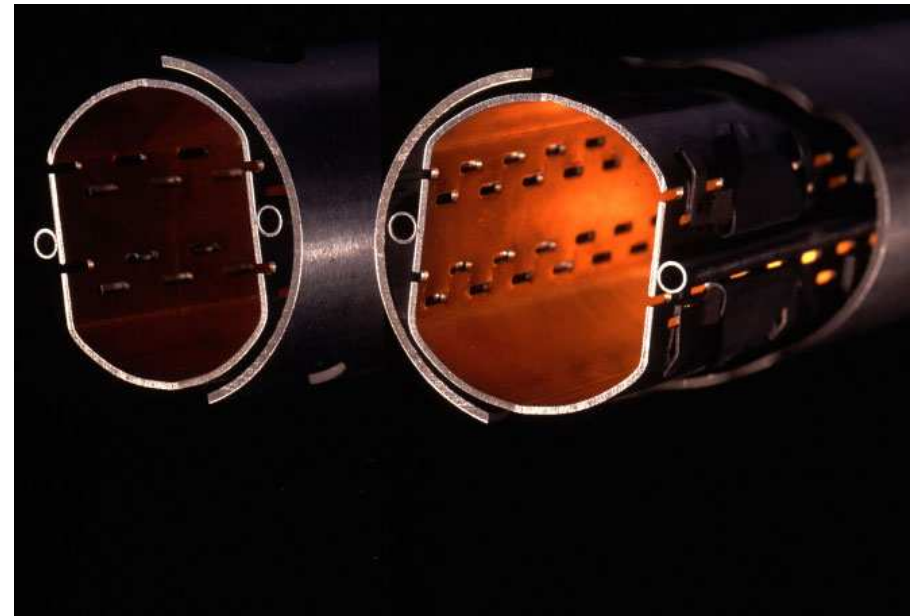




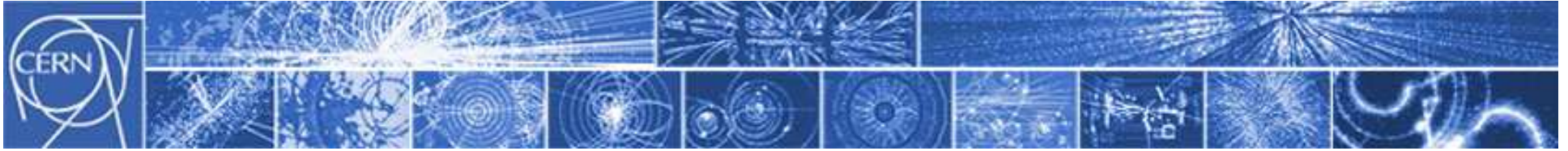
## Startup events, 2008 and 2010



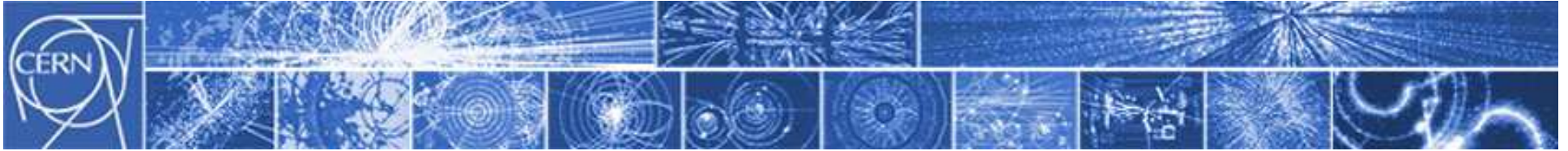
- 5-6 April 2008. open days
- 10 September 2008. First beam
- 21 October 2008. Official inauguration
- 30 March 2010. First Physics



- Neighbours
- Media
- Political
- Media

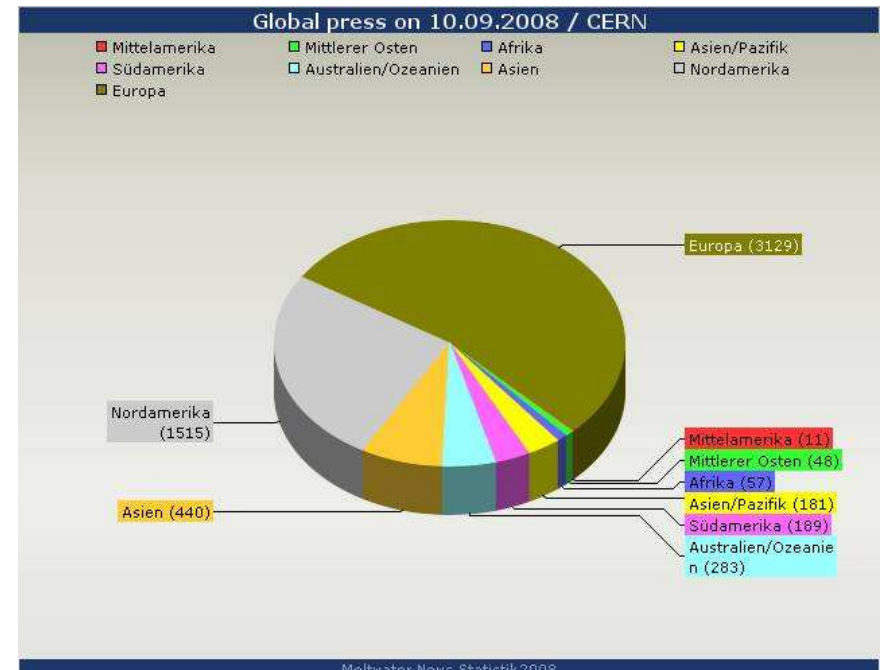
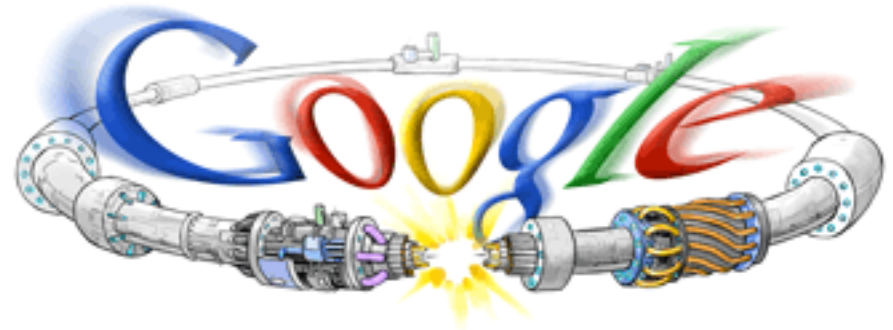


The overall result...



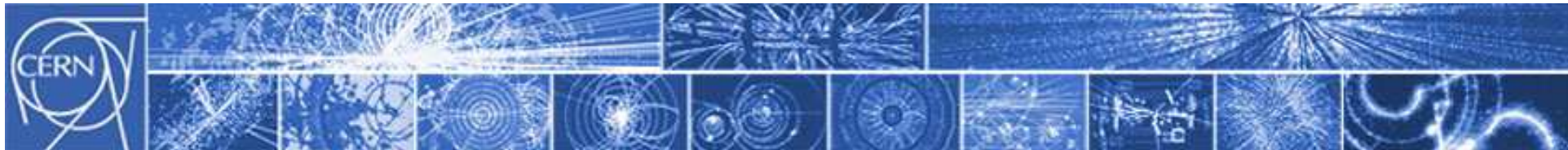
10 September 2008

- 450 broadcasters
- 2500 transmissions
- 91 stand-ups
- Audience in hundreds of millions



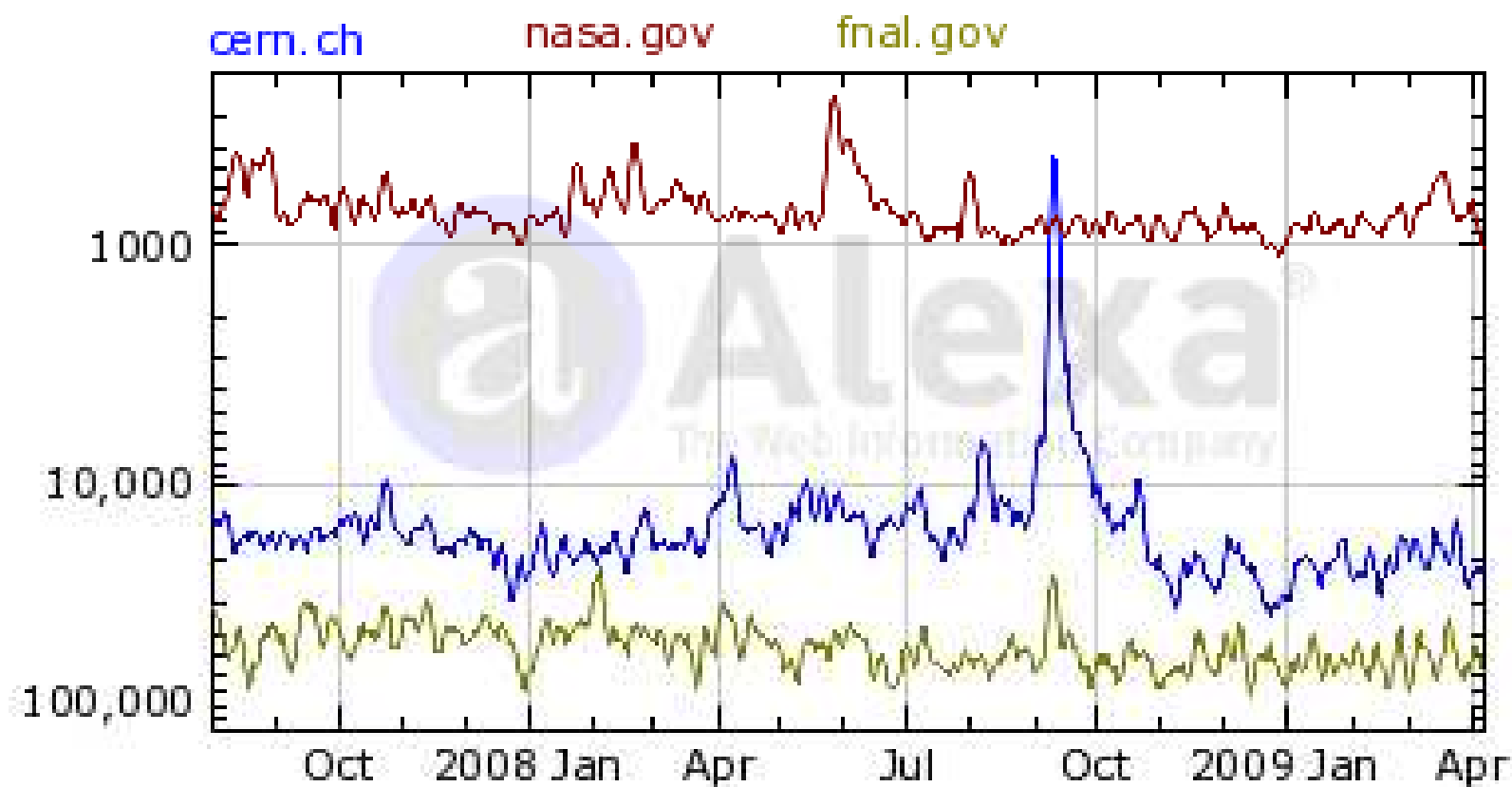
“CERN is the new NASA!”

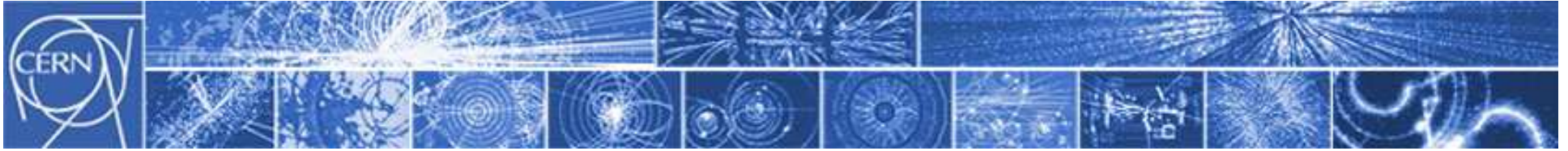




... well, for a couple of days at least...

### Daily Traffic Rank Trend





... and it continued through 2009.

Global language monitor...

Word of the year: twitter, but hadron came in at number 8

Phrase of the year: king of pop, but god particle came in at 10

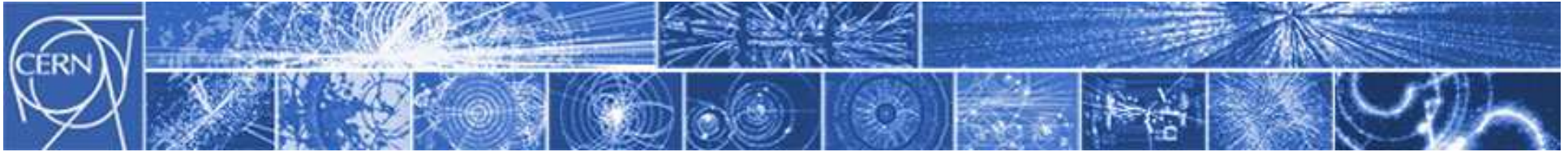
Name of the Year: Barak Obama, but LHC was number 4

Time magazine...

LHC restart made top 10 science discoveries

Bird drops bread made top 10 odd news stories

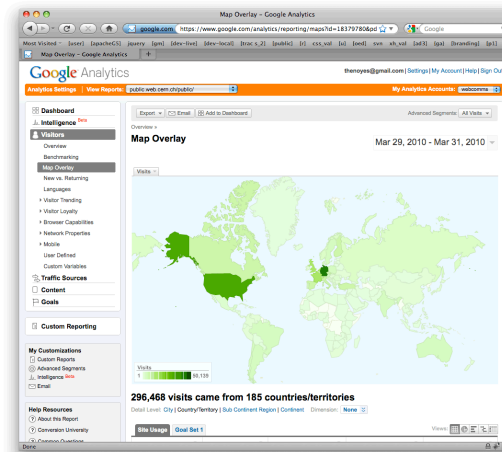




## 30 March 2010



- 231 peak simultaneous connections to CERN's HQ broadcast (from LHC institutes)
- The CERN LHC First Physics webcast was visited by 700,000 unique computers (IP addresses)
- GroovyGecko CEO: "make no mistake, this was a huge webcast"
- Yospace mobile streaming: 3,521 stream requests

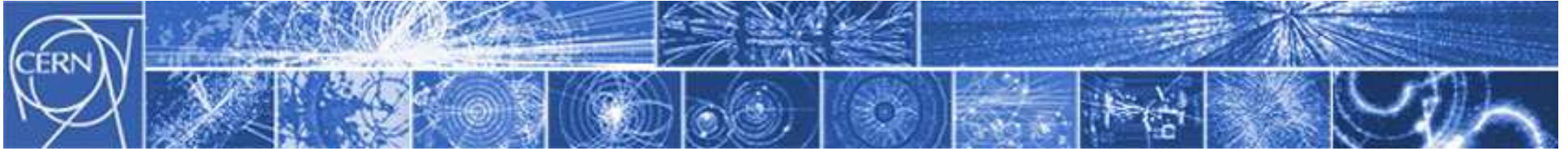


- CERN's public homepage recorded 205,000 visitors (unique IPs) from 185 countries. Normal average 10,000 visitors per day
- The Press Office site recorded 154,000 visitors. Normal average 2,000 per day



- CERN went from 90,000 to 120,000 followers during the day
- Keywords "LHC", "CERN", "TeV" and "experiment" were all global trends on Twitter at some point during the day



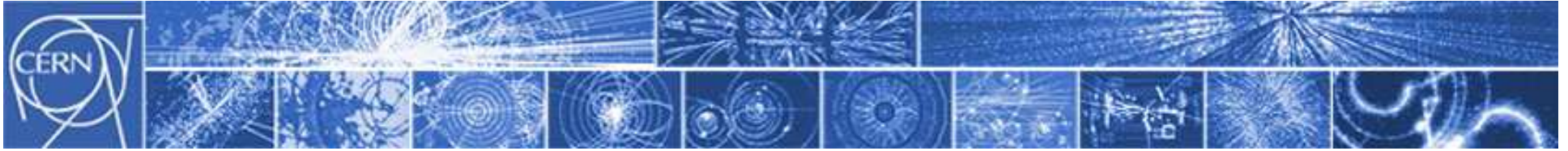


# Media coverage of LHC start-up(s)



2008



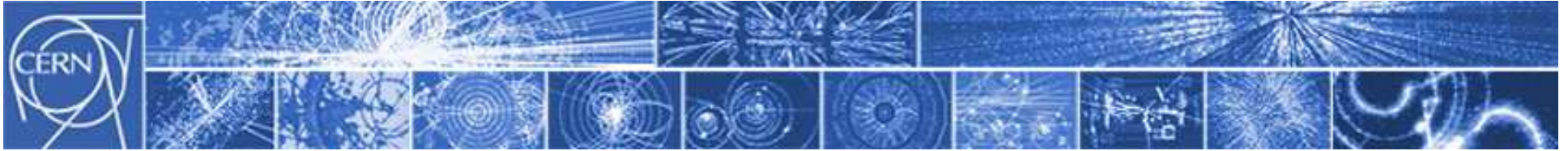


# Media coverage of LHC start-up(s)

2010







## What's next?



Making that headline come true!

*"The troubles of the mountains lie behind us.  
Before us lie the troubles of the plains."*

- Bertolt Brecht